



**>>Entry Name: Gramicidins A-D**

**Synonym(s):** Gramicidin, BAN, INN

**CAS Registry Number:** 1405-97-6

HCO-Val-Gly-Ala-D-Leu-Ala-D-Val-Val-D-Val-Trp-D-Leu-Trp-D-Leu-Trp-D-Leu-Trp-NHCH<sub>2</sub>CH<sub>2</sub>OH

**Use/Importance:** Strongly active against gram-positive bacteria. Toxic, causing haemolysis of red blood cells. Transports cations across membranes. Usually used topically in combination with other antimicrobial agents

**Hazard & Toxicity:** LD<sub>50</sub> (mus, ivn) 1.5 mg/kg

**>>Variant: 1-L-Isoleucinegramicidin A**

**Biological Source:** Minor constit. (18%) of Gramicidin A

**Optical Rotation:**  $[\alpha]_D^{20} +26.5$  (c, 0.45 in MeOH)

**>>Variant: 1-L-Valinegramicidin A**

**CAS Registry Number:** 4419-81-2

**Molecular Formula:** C<sub>99</sub>H<sub>139</sub>N<sub>19</sub>O<sub>18</sub>

**Molecular Weight:** 1883.304

**Accurate Mass:** 1882.054551

**Percentage Composition:** C 63.14%; H 7.44%; N 14.13%; O 15.29%

**Biological Source:** Major constit. (82%) of Gramicidin A

**Optical Rotation:**  $[\alpha]_D^{20} +27.3$  (c, 1.3 in MeOH)

**Solubility:** BERDY SOL: Sol. MeOH, Py, DMF, AcOH, dioxan, CHCl<sub>3</sub>; poorly sol. C<sub>6</sub>H<sub>6</sub>, H<sub>2</sub>O, hexane, toluene

**UV:** [neutral]  $\lambda_{\max}$  271 (); 281 (); 290 () (MeOH) (Berdy) [neutral]  $\lambda_{\max}$  272 (); 280 (); 292 () (EtOH) (Berdy)

**Hazard & Toxicity:** BERDY HAZD : LD<sub>50</sub> (mus, ivn) 5 mg/kg , LD<sub>50</sub> (mus, ipr) 60 mg/kg , LD<sub>50</sub> (mus, orl) 1000 mg/kg

**>>Variant: Gramicidin B**

**Synonym(s):** 11-L-Phenylalaninegramicidin A, 9CI

**CAS Registry Number:** 9062-60-6

**Melting Point:** Mp 258-259°

**Optical Rotation:**  $[\alpha]_D^{25} +6$  (c, 0.72 in DMF)

**Solubility:** BERDY SOL: Sol. MeOH, DMF, CHCl<sub>3</sub>; poorly sol. C<sub>6</sub>H<sub>6</sub>, hexane, H<sub>2</sub>O

**UV:** [neutral]  $\lambda_{\max}$  280 (); 292 () (EtOH) (Berdy)

**Other Data:** Major component is 1-Isoleucinegramicidin B (89%), minor component is 1-Valinegramicidin B (11%)

**>>Variant: Gramicidin C**

**Synonym(s):** 11-L-Tyrosinegramicidin A, 9CI

**CAS Registry Number:** 9062-61-7

**Source/Synthesis:** Countercurrent distribution coefficient K 1.32 (MeOH/H<sub>2</sub>O/C<sub>6</sub>H<sub>6</sub>/CHCl<sub>3</sub> 23:7:15:15)

**Melting Point:** Mp 280-283 dec.°

**Optical Rotation:**  $[\alpha]_D^{25} +11.4$  (c, 0.29 in DMF)

**Solubility:** BERDY SOL: Sol. MeOH, CHCl<sub>3</sub>; poorly sol. H<sub>2</sub>O, C<sub>6</sub>H<sub>6</sub>, hexane

**UV:** [neutral]  $\lambda_{\max}$  280 (); 290 () (EtOH) (Berdy)

**Fluka:** 50847

**>>Variant: Gramicidin D**

**CAS Registry Number:** 1393-88-0

**Other Data:** Distinguished from other Gramicidins by presence of Thr, Lys, Asp, Glu, Met and Pro-structure not fully elucidated

**Sigma:** G5002

**References:**